

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): ~~Expandable~~ An expandable tubular joint comprising,
~~on the one hand,~~

a first tubular element $[(EM)]$ comprising a first portion $[(P1)]$, provided with a male thread $[(FM)]$, and a second portion $[(P2)]$ extending said first portion and comprising i) a first outer surface ~~(SE1)~~, ii) a first annular lip $[(L1)]$ having a first axial abutment surface ~~(SB1)~~ and a first inner surface ~~(SI1)~~ and delimited by said first outer surface ~~(SE1)~~ over a portion of the axial length thereof, and iii) a second abutment surface ~~(SB2)~~; and, ~~on the other hand,~~

a second tubular element $[(EF)]$ comprising i) a female thread $[(FF)]$, matching the male thread $[(FM)]$ and screwed thereto, ii) a second annular lip $[(L2)]$ having a third abutment surface ~~(SB3)~~ resting against said second abutment surface ~~(SB2)~~, a second outer surface ~~(SE2)~~, arranged to face said first inner surface ~~(SI1)~~, and a second inner surface ~~(SI2)~~, iii) a fourth axial abutment surface ~~(SB4)~~, and iv) a third inner surface ~~(SI3)~~ extending between said fourth axial abutment surface ~~(SB4)~~ and said female thread $[(FF)]$ and defining with said second outer surface ~~(SE2)~~ and fourth abutment surface ~~(SB4)~~ an annular recess $[(LO)]$ matching said first lip $[(L1)]$, ~~characterised in that~~

wherein said second ~~(SB2)~~ and third ~~(SB3)~~ abutment surfaces are conical surfaces having substantially identical angles of inclination relative to a plane transverse to a longitudinal direction $[(A)]$, selected so as to allow said second abutment surface ~~(SB2)~~ to rest against said third abutment surface ~~(SB3)~~, generating a first radial and sealing interference contact of one of said first inner ~~(SI1)~~ and outer ~~(SE1)~~ surfaces of the first lip $[(L1)]$ against said second outer surface ~~(SE2)~~ or said third inner surface ~~(SI3)~~ respectively,

and such that, during a diametral expansion in the plastic deformation region subsequently carried out on the expandable tubular joint, said first outer surface (~~SE1~~) and said third inner surface (~~SI3~~) are forced locally to define a second sealing interference contact.

Claim 2 (Currently Amended): ~~Joint~~ The joint according to claim 1, wherein ~~characterised in that~~ said conical surfaces of the second (~~SB2~~) and third (~~SB3~~) abutment surfaces are convex and concave respectively, so as to generate said first radial and sealing interference contact of the first inner surface (~~SI1~~) against the second outer surface (~~SE2~~).

Claim 3 (Currently Amended): ~~Joint~~ The joint according to claim 1, wherein ~~characterised in that~~ said conical surfaces of the second (~~SB2~~) and third (~~SB3~~) abutment surfaces are concave and convex respectively, so as to generate said first radial and sealing interference contact of the first outer surface (~~SE1~~) against the third inner surface (~~SI3~~).

Claim 4 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 3~~ claim 1, wherein ~~characterised in that~~ said inclinations are initially between approximately +5° and approximately +30°.

Claim 5 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 4~~ claim 1, wherein ~~characterised in that~~ said first lip ~~[[L1]]~~ and said recess ~~[[LO]]~~ initially have shapes selected such that said first interference contact is not generated until said second abutment surface (~~SB2~~) rests on said third abutment surface (~~SB3~~).

Claim 6 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 5~~ claim 1, wherein ~~characterised in that~~ said first abutment surface (~~SB1~~) is arranged to be

forced during screwing to rest against said fourth abutment surface (~~SB4~~) so as to cause said first lip $[(L1)]$ to be subjected to axial compression in the elastic deformation region.

Claim 7 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 6~~ claim 1, wherein characterised in that the second outer surface (~~SE2~~) of said second lip $[(L2)]$ initially has, in the region of its connection to said third abutment surface (~~SB3~~), an annular portion inclined relative to said longitudinal direction $[(A)]$ by an angle of between approximately 8° and approximately 12° , and preferably equal to approximately 10° .

Claim 8 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 7~~ claim 1, wherein characterised in that said first inner surface (~~SH~~) of the first lip $[(L1)]$ is initially inclined relative to said longitudinal direction $[(A)]$ by an angle of between approximately 0.1° and approximately 15° .

Claim 9 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 8~~ claim 1, wherein characterised in that the ratio between the extension $[(PR)]$ of the second lip $[(L2)]$ in the longitudinal direction $[(A)]$ and the extension $[(H)]$ of the recess in the transverse direction is between approximately 1 and approximately 3, and preferably between approximately 1.2 and approximately 1.6.

Claim 10 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 9~~ claim 1, wherein characterised in that said male $[(FM)]$ and female $[(FF)]$ threads initially comprise threads provided with a carrier flank having a negative angle of between approximately -3° and approximately -15° .

Claim 11 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 10~~ claim 1, ~~wherein characterised in that~~ said male $[(FM)]$ and female $[(FF)]$ threads initially comprise threads provided with a stabbing flank having a positive angle of between approximately $+10^\circ$ and approximately $+30^\circ$.

Claim 12 (Currently Amended): ~~Joint~~ The joint according to claim 11, ~~wherein characterised in that~~ said male $[(FM)]$ and female $[(FF)]$ threads are arranged to have, after screwing and prior to expansion, an axial clearance between their stabbing flanks of between approximately 0.05 mm and approximately 0.3 mm.

Claim 13 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 12~~ claim 1, ~~wherein characterised in that~~ said first tubular element $[(EM)]$ initially has, in the region of its first outer surface (~~SE1~~) and before its first portion (P1), a conical chamfer defining a first local annular set-back (~~DC1~~) toward the interior.

Claim 14 (Currently Amended): ~~Joint~~ The joint according to claim 13, ~~characterised in that~~ wherein said chamfer has a slope which is substantially continuous relative to the longitudinal direction $[(A)]$ and between approximately 8° and approximately 12° .

Claim 15 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 14~~ claim 1, ~~characterised in that~~ wherein said first tubular element $[(EM)]$ is provided with a second portion $[(P2)]$ initially having a local annular added thickness (~~SA1~~) selected in the region of a fourth inner surface (~~S14~~) extending said second abutment surface (~~SB2~~) in the direction of the first portion $[(P1)]$, and said third inner surface $[(SI3)]$ comprises, at a selected location, a groove $[(G1)]$ suitable for being arranged after screwing substantially in

the region of said local added thickness (~~SA1~~) and for defining in the region of the first outer surface (~~SE1~~), during the diametral expansion, an annular shoulder $[(EP)]$ having at least a portion of the shape of said groove $[(G1)]$ and being in sealing interference contact therewith.

Claim 16 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 15~~ claim 1, characterised ~~in that~~ wherein said first tubular element $[(EM)]$ initially has in the region of its first portion $[(P1)]$, over its inner surface opposing said male thread $[(FM)]$, a conical neck in which is defined a second local annular set-back (~~DC2~~).

Claim 17 (Currently Amended): ~~Joint~~ The joint according to claim 16, characterised ~~in that~~ wherein said neck initially grows substantially continuously at a slope relative to the longitudinal direction $[(A)]$ of between approximately 2° and approximately 20° .

Claim 18 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 15 to 17~~ claim 15, characterised ~~in that~~ wherein a groove $[(G1)]$ comprising at least two curvilinear portions (~~C1, C2~~) is initially provided.

Claim 19 (Currently Amended): ~~Joint~~ The joint according to claim 18, characterised ~~in that~~ wherein said curvilinear portions (~~C1, C2~~) initially have substantially identical radii of curvature.

Claim 20 (Currently Amended): ~~Joint~~ The joint according to claim 19, characterised ~~in that~~ wherein said radius of curvature is initially between approximately 2 mm and approximately 60 mm.

Claim 21 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 18 to 20~~ claim 18, ~~characterised in that~~ wherein the two curvilinear portions (C1, C2) are separated by a substantially cylindrical central portion [(PC)].

Claim 22 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 18 to 21~~ claim 18, ~~characterised in that~~ wherein said groove [(G1)] initially has a radial depth [(H')], the maximum value of which is selected such that the material section [(G1)] at the bottom of the groove is greater than the product of the smallest section of a common portion of the tubes (T1, T2) with which said first [(EM)] and second [(EF)] tubular elements are associated, and the efficiency of the joint under tension.

Claim 23 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 22~~ claim 1, ~~characterised in that~~ wherein said male [(FM)] and female [(FF)] threads are selected from a group consisting of conical-type and cylindrical-type threads and are each formed over at least one tubular element portion (EM, EF).

Claim 24 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 23~~ claim 1, ~~characterised in that~~ wherein in that said first tubular element [(EM)] is provided with a first rounded outer surface [(SE1)].

Claim 25 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 1 to 24~~ claim 1, ~~characterised in that~~ wherein said second tubular element is associated with a substantially symmetrical female/female-type connection sleeve [(M)] and said first tubular element [(EM)] is associated with an end of a great length tube.

Claim 26 (Currently Amended): ~~Joint~~ The joint according to claim 25, ~~characterised in that~~ wherein said sleeve $[(M)]$ comprises a central portion (PCM) extended on either side by two second tubular elements $(EF1, EF2)$ and initially provided over an outer surface with an annular zone $[(G2)]$ having a reduced thickness selected such that the initial thickness of said sleeve $[(M)]$ in the region of this zone $[(G2)]$ is greater than or equal to the product of the section of a common portion of the tubes $(T1, T2)$, at the ends of which are formed said first tubular elements $[(EM)]$, and the efficiency of the joint.

Claim 27 (Currently Amended): ~~Joint~~ The joint according to claim 2 ~~in combination with any one of claims 4 to 26, characterised in that~~ wherein said first $[(L1)]$ and second $[(L2)]$ lips initially have shapes selected such that said first abutment surface $(SB1)$ rests on said fourth abutment surface $(SB4)$ before said second abutment surface $(SB2)$ is pressed onto said third abutment surface $(SB3)$.

Claim 28 (Currently Amended): ~~Joint~~ The joint according to claim 3 ~~in combination with any one of claims 4 to 26, characterised in that~~ wherein said third inner surface $(SI3)$ of the second tubular element $[(EF)]$ initially has, in the region of its connection to said fourth abutment surface $(SB4)$, a first sealing surface $(DC3)$ generally having a selected angle of inclination relative to the longitudinal direction $[(A)]$ and in that said first tubular element $[(EM)]$ initially has, in the region of its first outer surface $(SE1)$ and in the region of its connection to said first abutment surface $(SB1)$, a second sealing surface $(DC4)$ generally having a selected angle of inclination relative to the longitudinal direction (A) in such a way that, during screwing, said first $(DC3)$ and second $(DC4)$ sealing surfaces are radially tightened against one another, generating a third sealing interference contact.

Claim 29 (Currently Amended): ~~Joint~~ The joint according to claim 28, ~~characterised in that wherein~~ said first (~~DC3~~) and second (~~DC4~~) sealing surfaces are arranged in such a way that said first sealing interference contact is generated between them after said third sealing interference contact, so as to reinforce said third sealing interference contact.

Claim 30 (Currently Amended): ~~Joint~~ The joint according to either claim 28 ~~or claim 29, characterised in that wherein~~ said selected angles of the first (~~DC3~~) and second (~~DC4~~) sealing surfaces are initially between approximately $+1^{\circ}$ and approximately $+30^{\circ}$.

Claim 31 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 28 to 30~~ claim 28, ~~characterised in that wherein~~ at least one of said first (~~DC3~~) and second (~~DC4~~) sealing surfaces is a conical surface.

Claim 32 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 28 to 31~~ claim 28, ~~characterised in that wherein~~ at least one of said first (~~DC3~~) and second (~~DC4~~) sealing surfaces is a rounded surface.

Claim 33 (Currently Amended): ~~Joint~~ The joint according to claim 32, ~~characterised in that wherein~~ said rounded surface comprises a toric-type portion.

Claim 34 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 28 to 33~~ claim 28, ~~characterised in that wherein~~ said first sealing surface (~~DC3~~) is defined by a third local annular set-back toward the interior of said third inner surface (~~SI3~~).

Claim 35 (Currently Amended): ~~Joint~~ The joint according to ~~any one of claims 28 to 34~~ claim 28, ~~characterised in that~~ wherein said second sealing surface (DC4) is defined by a fourth local annular set-back toward the interior of said first outer surface (SE1).

Claim 36 (Currently Amended): ~~Method~~ A method for producing a sealed tubular expanded joint, ~~characterised in that it consists, based on an expandable tubular joint according to any one of the preceding claims, comprising~~ a first tubular element comprising a first portion, provided with a male thread, and a second portion extending said first portion and comprising i) a first outer surface, ii) a first annular lip having a first axial abutment surface and a first inner surface and delimited by said first outer surface over a portion of the axial length thereof, and iii) a second abutment surface; and a second tubular element comprising i) a female thread, matching the male thread and screwed thereto, ii) a second annular lip having a third abutment surface resting against said second abutment surface, a second outer surface, arranged to face said first inner surface, and a second inner surface, iii) a fourth axial abutment surface, and iv) a third inner surface extending between said fourth axial abutment surface and said female thread and defining with said second outer surface and fourth abutment surface an annular recess matching said first lip, wherein said second and third abutment surfaces are conical surfaces having substantially identical angles of inclination relative to a plane transverse to a longitudinal direction, selected so as to allow said second abutment surface to rest against said third abutment surface, generating a first radial and sealing interference contact of one of said first inner and outer surfaces of the first lip against said second outer surface or said third inner surface respectively, and such that, during a diametral expansion in the plastic deformation region subsequently carried out on the expandable tubular joint, said first outer surface and said third inner surface are forced locally to define a second sealing interference contact, the method comprising:

[[- in]] screwing said first [(EM)] and second [(EF)] tubular elements until said first lip [(L1)] is accommodated in said annular recess [(LO)] and said second abutment surface (SB2) rests against said third abutment surface (SB3) so as radially to tighten, in a sealed manner by forming a first radial and sealing interference contact, one of said first inner (SH) and outer (SE1) surfaces of the first lip [(L1)] against said second outer surface (SE2) or said third inner surface (SI3) respectively, and

[[- in]] subjecting said expandable tubular joint, by means of an axially displaceable expansion tool, to a diametral expansion in the plastic deformation region, so as to force said first outer surface (SE1) and said third inner surface (SI3) locally to define a second sealing interference contact.

Claim 37 (Currently Amended): ~~Method~~ The method according to claim 36, ~~characterised in that~~ wherein first [(L1)] and second [(L2)] lips having shapes selected such that said first interference contact is established between said first inner surface [(SI1)] and second outer surface [(SE2)] are taken as a starting point and in that said first interference contact is not established until said second abutment surface [(SB2)] rests on said third abutment surface [(SB3)].

Claim 38 (Currently Amended): ~~Method~~ The method according to claim 37, ~~characterised in that~~ wherein said screwing firstly forces said first abutment surface (SB1) to be pressed against said fourth abutment surface (SB4) so as to cause said first lip [(L1)] to be subjected to axial compression in the elastic deformation region.

Claim 39 (Currently Amended): ~~Method~~ The method according to claim 36, characterised in that an expandable tubular joint ~~according to claim 28~~ is taken as a starting

point and in that said screwing forces said first (~~DC3~~) and second (~~DC4~~) sealing forces to be radially tightened against one another, generating first the third sealing interference contact then the first sealing interference contact, which comes to reinforce said third sealing interference contact.

Claim 40 (Currently Amended): ~~Method~~ The method according to ~~any one of claims 36 to 39~~ claim 36, ~~characterised in that~~ wherein said expansion generates a fourth sealing interference contact between a free end of the first inner surface (~~SH~~) and the second outer surface (~~SE2~~).

Claim 41 (Currently Amended): ~~Method~~ The method according to ~~any one of claims 36 to 40~~ claim 36, ~~characterised in that~~ wherein the radial expansion of the joint takes place at an expansion rate at least equal to 10%.